

## AMENDMENTS TO THE CLAIMS

### 1-21. (Canceled)

22. **(Currently Amended)** A group judgment device that is connected to a network and that shares common private information with a target device connected to the group judgment device via the network, the group judgment device comprising:

at least one processor configured to operate as:

a conversion unit operable to convert the common private information into first conversion information according to a predetermined conversion;

a transmission/reception unit operable to transmit first data to the target device, and receive, from the target device, second data including second conversion information in response to the first data, the target device converting the common private information into the second conversion information according to the same conversion as the predetermined conversion, and transmitting to the group judgment device the second data including the second conversion information;

a measurement unit operable to measure, as a target time, a time required between (a) transmission of the first data by the transmission/reception unit and (b) reception of the second data by the transmission/reception unit; and

a judgment unit operable to (i) compare the target time measured by the measurement unit with a reference time, the reference time being a time required between (a) transmission of the first data to a device belonging to a predetermined group and (b) reception of the second data from the device belonging to the predetermined group, and (ii) compare the first conversion information generated by the conversion unit and the second conversion information included in the second data received by the transmission/reception unit, and judge that the target device belongs to the predetermined group when (i) a difference between the target time and the reference time is within a predetermined range and (ii) the first conversion information matches the second conversion information.

23. **(Currently Amended)** A group judgment device that is connected to a network and that shares common private information with a target device connected to the group judgment device via the network, the group judgment device comprising:

at least one processor configured to operate as:

a conversion unit operable to convert the common private information into first conversion information according to a first conversion, and to convert the common private information into second conversion information according to a second conversion, the first conversion being distinct from the second conversion;

a transmission/reception unit operable to transmit first data including the first conversion information to the target device, and receive, from the target device, second data including third conversion information in response to the first data, the target device converting the common private information into the third conversion information according to the second conversion, and transmitting to the group judgment device the second data including the third conversion information;

a measurement unit operable to measure, as a target time, a time required between (a) transmission of the first data by the transmission/reception unit and (b) reception of the second data by the transmission/reception unit; and

a judgment unit operable to (i) compare the target time measured by the measurement unit with a reference time, the reference time being a time required between (a) transmission of the first data to a device belonging to a predetermined group and (b) reception of the second data from the device belonging to the predetermined group, (ii) compare the second conversion information generated by the conversion unit and the third conversion information included in the second data received by the transmission/reception unit, and (iii) judge whether a message is received from the target device, the message indicating that the target device judges that the first conversion information matches fourth conversion information, the target device converting the common private information into the fourth conversion information according to the first conversion and comparing the first conversion information included in the received first data and the fourth conversion information, , and (iv) judge that the target device belongs to the predetermined group when (i) a difference between the target time and the reference time is within a predetermined range, (ii) the second conversion information matches the third conversion information, and (iii) the message is received.

24-25. (Canceled)

26. **(Currently Amended)** A group judgment system including a target device and a group judgment device that are connected to a network, the target device and the group judgment device sharing common private information,

wherein the group judgment device includes:

at least one processor configured to operate as:

a first conversion unit operable to convert the common private information into first conversion information according to a predetermined conversion; and

a transmission/reception unit operable to transmit first data to the target device,

wherein the target device includes:

a reception unit operable to receive the first data from the group judgment device;

a second conversion unit operable to convert the common private information into the second conversion information according to the predetermined conversion ; and

a transmission unit operable to transmit to the group judgment device second data including the second conversion information, and

wherein the group judgment device also includes:

a transmission/reception unit operable to receive from the target device the second data including the second conversion information;

a measurement unit operable to measure, as a target time, a time required between (a) transmission of the first data by the transmission/reception unit and (b) reception of the second data by the transmission/reception unit; and

a judgment unit operable to (i) compare the target time measured by the measurement unit with a reference time, the reference time being a time required between (a) transmission of the first data to a device belonging to a predetermined group and (b) reception of the second data from the device belonging to the predetermined group, and (ii) compare the first conversion information generated by the first conversion unit and the second conversion information included in the second data received by the transmission/reception unit, and judge that the target device belongs to the predetermined group when (i) a difference between the target time and the reference time is within a predetermined range and (ii) the first conversion information matches the second conversion information .

27-30. **(Canceled)**

31. **(Previously Presented)** The group judgment device according to claim 22, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when (i) the difference between the target time and the reference time is not within the predetermined range.

32. **(Previously Presented)** The group judgment device according to claim 31, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when (i) the difference between the target time and the reference time is within the predetermined range and (ii) the first conversion information does not match the second conversion information.

33. **(Previously Presented)** The group judgment device according to claim 23, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when the difference between the target time and the reference time is not within the predetermined range.

34. **(Previously Presented)** The group judgment device according to claim 33, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when (i) the difference between the target time and the reference time is within the predetermined range, and (ii) the second conversion information does not match the third conversion information.

35. **(Previously Presented)** The group judgment device according to claim 34, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when (i) the difference between the target time and the reference time is within the predetermined range, (ii) the second conversion information matches the third conversion information, and (iii) the message is not received.

36. **(Previously Presented)** The group judgment system according to claim 26, wherein the judgment unit is operable to judge that the target device does not belong to the

predetermined group when (i) the difference between the target time and the reference time is not within the predetermined range.

37. **(Previously Presented)** The group judgment system according to claim 36, wherein the judgment unit is operable to judge that the target device does not belong to the predetermined group when (i) the difference between the target time and the reference time is within the predetermined range and (ii) the first conversion information does not match the second conversion information.

38. **(Currently Amended)** A method for controlling a group judgment device, the group judgment device being connected to a network and sharing common private information with a target device connected to the group judgment device via the network, the method comprising:

- converting, via at least one processor, the common private information into first conversion information according to a predetermined conversion;

- transmitting first data to the target device, and receive, from the target device, second data including second conversion information in response to the first data, the target device converting the common private information into the second conversion information according to the same conversion as the predetermined conversion, and transmitting to the group judgment device the second data including the second conversion information;

- measuring, as a target time, a time required between (a) transmission of the first data by the transmission/reception unit and (b) reception of the second data by the transmission/reception unit;

- comparing the target time measured by the measurement unit with a reference time, the reference time being a time required between (a) transmission of the first data to a device belonging to a predetermined group and (b) reception of the second data from the device belonging to the predetermined group;

- comparing the generated first conversion information and the second conversion information included in the received second data; and

- judging that the target device belongs to the predetermined group when (i) a difference between the target time and the reference time is within a predetermined range and (ii) the first

conversion information matches the second conversion information.